

In the Drawings

Kindly delete Figs. 2, 4 and 5 and replace them with the attached replacement Figs.

2, 4 and 5. No new matter has been added.

REMARKS

Introduction

The applicant notes that the irrigation industry and the Environmental Protection Agency are concerned with avoiding waste and runoff of irrigation water. While that goal
5 may be a side effect provided by the patents cited by the examiner, those patents are primarily directed towards attempting to determine specific plant water needs and then making adjustments to irrigation schedules using evapotranspiration (ET) data. The present invention is not nearly that complex, and has a different and much more fundamental focus: to conserve water.

10 The examiner is reminded that this application has been granted "special" status, and prompt processing of this amendment is requested.

Drawings

The examiner has objected to the drawings pursuant to 37 C.F.R. § 1.83(a) as lacking graphical symbols or labeled representations. In response, Figs. 2, 4 and 5 have
15 been amended to conform to § 1.83(a). No new matter has been added.

Claim Objections

The examiner has objected to claims 6, 14, 16 and 22 for grammatical informalities. In response, these claims have been amended to address the informalities. The examiner's suggestions in this regard are greatly appreciated.

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Rejections Under 35 U.S.C. § 112

The examiner has rejected claims 8-10 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In response, "the expected high temperature" of claim 8 has been amended to refer to the "maximum" high temperature of preceding claim 6. Similarly, the "current" temperature budget factor of claim 10 has been amended to refer to the "periodic" budget factor. Similar clarifications have been made in other claims.

Rejections Under 35 U.S.C. § 102(b)

The examiner has rejected claims 1, 11, 12, 19, 20 and 23-25 under 35 U.S.C. § 102(b) as being anticipated by Hopkins et al (U.S. 5,097,861). The examiner has also rejected these same claims under 35 U.S.C. § 102(b) as being anticipated by Addink et al (U.S. 6,298,285). In response, the applicant points out that the inventions of both Hopkins and Addink rely on the use of evapotranspiration (ET) data in making their respective computations. See Hopkins at 2:20-28; and Addink at 3:34-36 and Fig. 1. In contrast, the present invention deliberately *avoids* the use of ET data, and provides much simpler yet equally effective methods for altering irrigation watering schedules. See specification, page 13, lines 2-5; page 22, lines 6-11; and background beginning on page 4, line 6 through page 12, line 20. The applicant further notes that neither Hopkins nor Addink make any mention of "water budgeting" or any "ratio" much less "computing a water budget ratio" as called for in the claims of the present invention.

Independent claims 1 and 19 have been amended to clarify that the claimed local geo-environmental data of the invention does not include evapotranspiration (ET) data. This clearly distinguishes these claims, and the claims which depend therefrom, from both Hopkins and Addink.

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Rejections Under 35 U.S.C. § 103(a)

The examiner has rejected claims 2, 3, 13¹ and 21 under 35 U.S.C. § 103(a) as being unpatentable over Hopkins et al (U.S. 5,097,861) in view of Mecham et al (U.S. 6,314,340). Among other things, the examiner asserts that Hopkins discloses computing a water budget ratio by comparing local geo-environmental data with stored geo-environmental data,
10 referring to col. 2, lines 15-55 of Hopkins. In response, the applicant again notes that nowhere does Hopkins make any mention of “water budgeting” or any “ratio” much less, “computing a water budget ratio” as called for in the claims of the present invention.

In addition, a review of the Hopkins patent reveals that all computations in Hopkins rely on the use of evapotranspiration (ET) data. (See, e.g., col. 2, lines 15-55.) This ET data
15 as well as monthly mean temperature rates are the only stored geo-environmental data relied on in Hopkins to perform its calculations. The examiner acknowledges that Hopkins does not disclose the use of extraterrestrial radiation (RA) values arranged by date and by approximate latitude in its computations. The examiner refers to Mecham as disclosing the use of a table of RA values arranged by date and by approximate latitude, and asserts that it

¹ Claim 13 appears to have erroneously been included in this list since it includes no limitation related to extraterrestrial radiation (RA) values, and because claim 13 was separately rejected on other grounds.

would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the table of RA values of Mecham in the control system of Hopkins because Mecham teaches an advantage that temperature variations from zone to zone can be accounted for thus allowing for a more accurate irrigation calculation.

5 In response, the applicant first points out that base claims 1 and 19 have been amended, as discussed above, to clarify that the claimed local geo-environmental data of the present invention does not include evapotranspiration (ET) data.

 Then, in order to establish a prima facie case of obviousness based upon a combination of the content of various references, there must be some teaching, suggestion
10 or motivation in those prior art references to make the specific combination that was made by the applicant. *In re Dance*, 160 F.3d 1339, 1343 (Fed. Cir. 1998). It is impermissible to reconstruct the claimed invention from selected pieces of prior art absent some suggestion, teaching or motivation in the prior art to do so. *Uniroyal, Inc. v. Rudkin-Wiley Corp.* 837 F.2d 1044, 1051-52 (Fed. Cir. 1988). In this case, there is no
15 mention whatsoever in Hopkins of extraterrestrial radiation (RA) values. Thus, Hopkins alone does not provide any suggestion or motivation for using extraterrestrial radiation (RA) values for any purpose, much less combining it with any other method or apparatus.

 Turning to Mecham, it is abundantly clear that Mecham also relies on the use of evapotranspiration (ET) data, using the Hargreaves equation to determine a reference ET
20 value. (See, e.g., col. 2, lines 27-30; and col. 6, lines 8-11.) The only reason RA is mentioned in Mecham is because it is one of the factors used in the Hargreaves equation

itself to determine ET. (See col. 2, lines 21-46.) There is no independent use of RA in Mecham for any purpose other than to determine ET using the Hargreaves equation. By contrast, the present invention deliberately *avoids* the use of ET data, and specifically criticizes using the Hargreaves equation. (See specification, beginning at page 5, line 14
5 through page 6, line 5.) The shortcomings of the Hargreaves equation are also acknowledged in Mecham at col. 3, lines 13-16. Accordingly, there is no suggestion, teaching or motivation in Mecham to use RA values in a non-ET based calculation. Since Hopkins also relies on ET, neither of these references provides the necessary suggestion, teaching or motivation to use RA for the purposes of the present invention, namely, to
10 save water by adjusting irrigation watering schedules using calculations that have nothing to do with ET. The present invention does not use any historical, stored, transmitted or calculated ET equation or data.

The examiner has rejected claim 13 under 35 U.S.C. § 103(a) as being unpatentable over Addink et al (U.S. 6,298,285) in view of Pittsinger (U.S. 4,921,001). In response, the
15 applicant points out that base claim 1 has been amended to overcome Addink by clarifying that the claimed local geo-environmental data of the invention does not include the evapotranspiration (ET) data relied upon in Addink. Accordingly, claim 1 and dependent claim 13 are believed to now be in condition for allowance.

New Claims

20 New claims 26-50 are added by this amendment. No new matter has been introduced.

Allowed Claims

The examiner has allowed claims 14-19. Claims 4 and 22 were objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claim 4
5 has been rewritten in independent form as new claim 26, and claim 22 has been rewritten as new claim 45 which are now believed to be in condition for allowance.

Summary

A total of 50 claims are present as a result of this amendment, of which 14 are
10 independent claims. Payment for 25 total claims including 3 independent claims has previously been made. Thus, a check in the amount of \$1,725 is enclosed representing the total small entity fee for the additional fees comprising:

- (1) the independent claims fee of \$1,100 for the 11 new independent claims in excess of three at \$100 each (37 C.F.R. § 1.16(i)), created or added by this amendment; and
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- (2) a fee of \$625 for the 25 claims in excess of those already paid for at \$25 each (37 C.F.R. § 1.16(j)).

Authorization to Charge Additional Fees

The Office is hereby authorized to charge deposit account number 502429 for any additional fees that may be required by this paper.


20 In view of the above, it is submitted that all claims are in condition for allowance. Allowance of the claims at an early date is solicited.

The examiner is encouraged to contact the undersigned by telephone to resolve any outstanding issues concerning this application.

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Respectfully Submitted,

By 

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